

Uncertainty in Economics

Why should we care?

Lars Peter Hansen

University of Chicago

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Haunted by Hayek's Forewarning



“Even if true scientists should recognize the limits of studying human behaviour, as long as the public has expectations, there will be people who *pretend* or *believe* that they can do more to meet popular demand than what is really in their power.”
(From Hayek's Nobel address, 1974)

While economist interested in quantitative policy analysis should not just “throw in the towel,” they should be cognizant of the **limits to their knowledge**.

Evidence-Based Policy: Let the Data Speak?

Long history of discussion and debate contrasting empiricism (let-the-data-speak) with explicit economic modeling for understanding data.

The most reckless and treacherous of all theorists is he who professes to let facts and figures speak for themselves, who keeps in the background the part he has played, perhaps unconsciously, in selecting and grouping them.

Alfred Marshall, 1885.

Koopmans, 1947, *Measurement Without Theory*,

Quantitative Storytelling

Use **mathematical models** with numerical inputs to further our **understanding** and support **policy analysis**.

Ingredients:

- ▷ substantive knowledge
- ▷ empirical evidence
- ▷ subjective judgment

Aims:

- ▷ interpret evidence
- ▷ study counterfactuals used for policy analysis
- ▷ offer transparency and clarity

Structural models and policy: Marshak, Hurwicz and Lucas

Where does Uncertainty Emerge?

Quantitative storytelling with multiple stories

- ▷ each model has **random impulses** and requires numerical inputs
- ▷ each model is an **abstraction**: stories are not intended to be detailed recordings of actual histories or complete descriptions of reality
- ▷ **multiple models** give rise to multiple “stories” with **different implications**

How do we build **frameworks** and apply them to confront **policy uncertainty**, broadly-conceived?

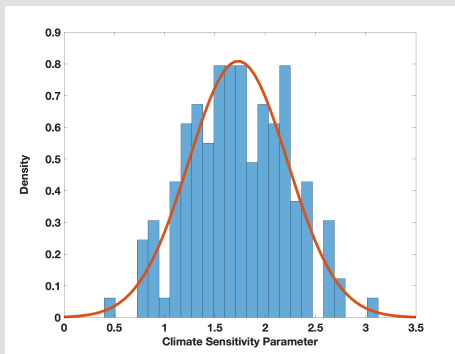
Uncertainty and Financial Market Oversight

- ▷ **United States:** Financial Stability Oversight Council (created in 2010)
- ▷ **Europe:** Financial Stability Committee
- ▷ **UK:** Financial Policy Committee (created in 2013)
- ▷ **Challenges:**
 - **What is systemic risk?:** a grab bag of “stories” rationalizing interventions in financial markets
 - **Better to view as systemic uncertainty:** limited understanding of systemic risk challenges its value as a guiding principle for financial oversight

Uncertainty, Climate Change and Economic Valuation

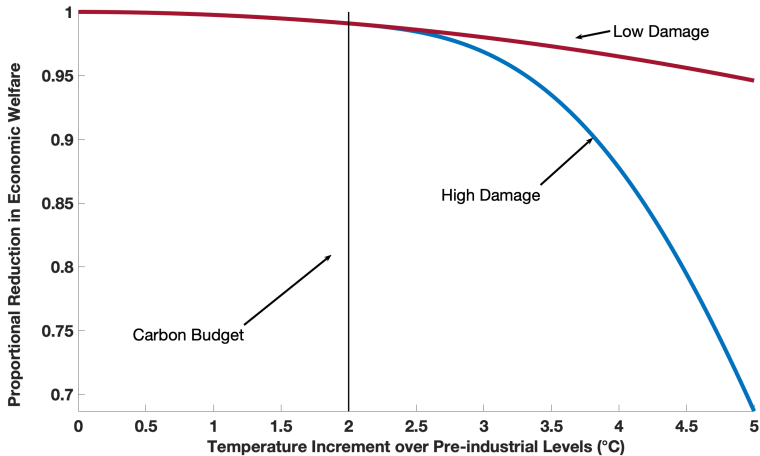
- ▷ conceptual difference between **social valuation** and **market valuation** because market valuation **fails** to account for **full social impact** of human inputs on the climate
- ▷ **asset pricing** and **decision theory** under uncertainty provide valuable tools for **social valuation**
- ▷ **uncertainty** can have a **big impact** on the measurement of the **social cost of carbon** - an idealized target defined formally as a socially efficient (Pigouvian) tax
- ▷ **two sources** of uncertainty that are **interconnected**
 - impact of CO2 emissions on temperature changes
 - impact of temperature changes on well-being

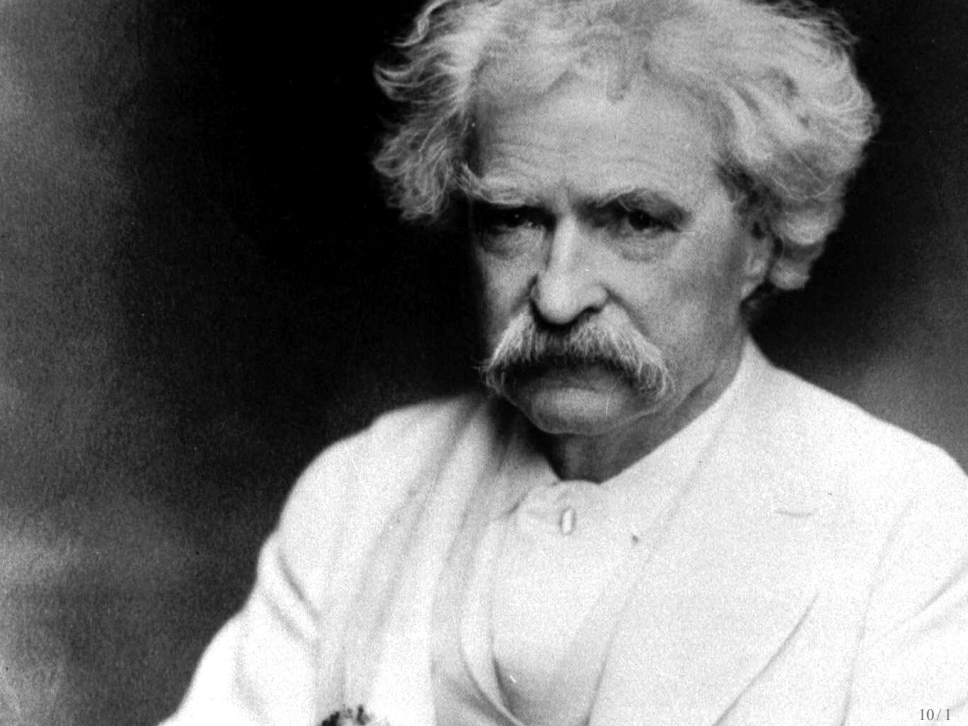
Climate Sensitivity Uncertainty

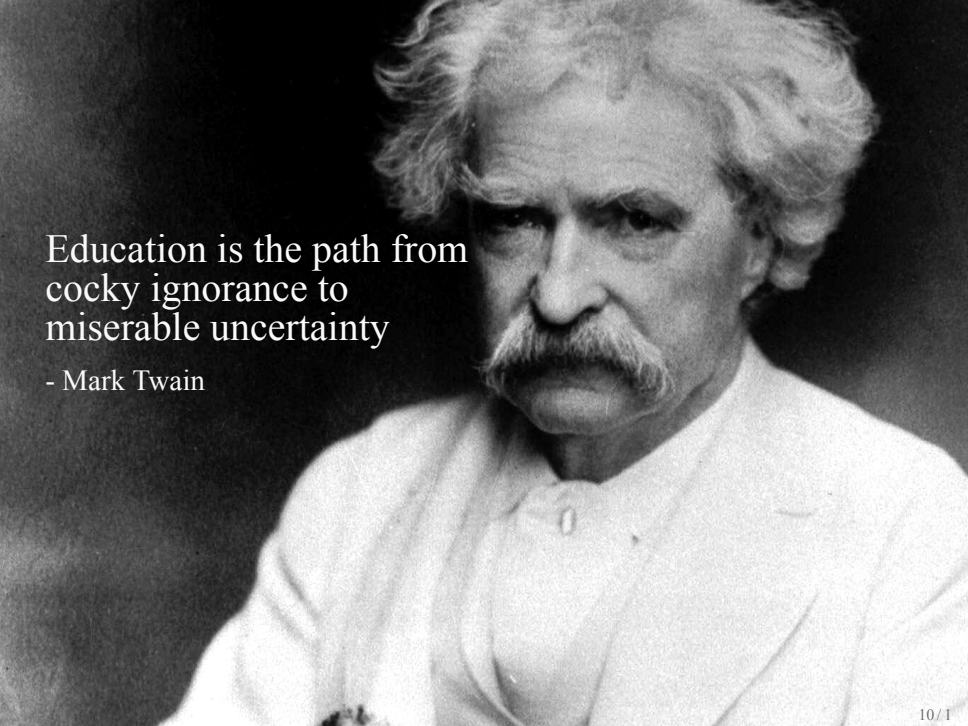


Histograms and density for the climate sensitivity parameter across models. Evidence is from MacDougall-Swart-Knutti (2017).

Economic Damage Uncertainty





A black and white portrait of Mark Twain, showing him from the chest up. He has white, wavy hair and a prominent white mustache. He is wearing a light-colored, high-collared shirt. The background is dark and out of focus.

Education is the path from
cocky ignorance to
miserable uncertainty

- Mark Twain